

temperature that is less than the preselected application temperature and greater than a martinsite start temperature of the spray forming material.

[c15]

15. The method of claim 14, wherein the manipulation of at least one of the substrate temperature and the spray forming cell environment temperature further comprises maintaining the mold substrate at the second preselected temperature for a second predetermined time interval and thereafter decreasing the temperature of the mold substrate to the second preselected temperature that is less than the preselected application temperature and less than the martinsite start temperature of the spray forming material.

[c16]

16. The method of claim 4, wherein the manipulation of at least one of the substrate temperature and the spray forming cell environment temperature further comprises maintaining the mold substrate at the preselected temperature that is at least as great as the preselected application temperature for the predetermined time interval and thereafter decreasing the temperature of the mold substrate to the second preselected temperature that is less than the preselected application temperature and less than a martinsite start temperature of the spray forming material.

Abstract of Disclosure

[0106] A method for implementing post-heat treatment during spray forming to achieve stress control in the manufacture of a spray formed metallic tool involves applying a metallic spray-forming material onto a mold substrate and causing substantially homogenous metallic phase transformations from the austenite phase, for example, via manipulation of either or both of the substrate temperature and the spray forming cell environment temperature.

Figures